

FIG.1

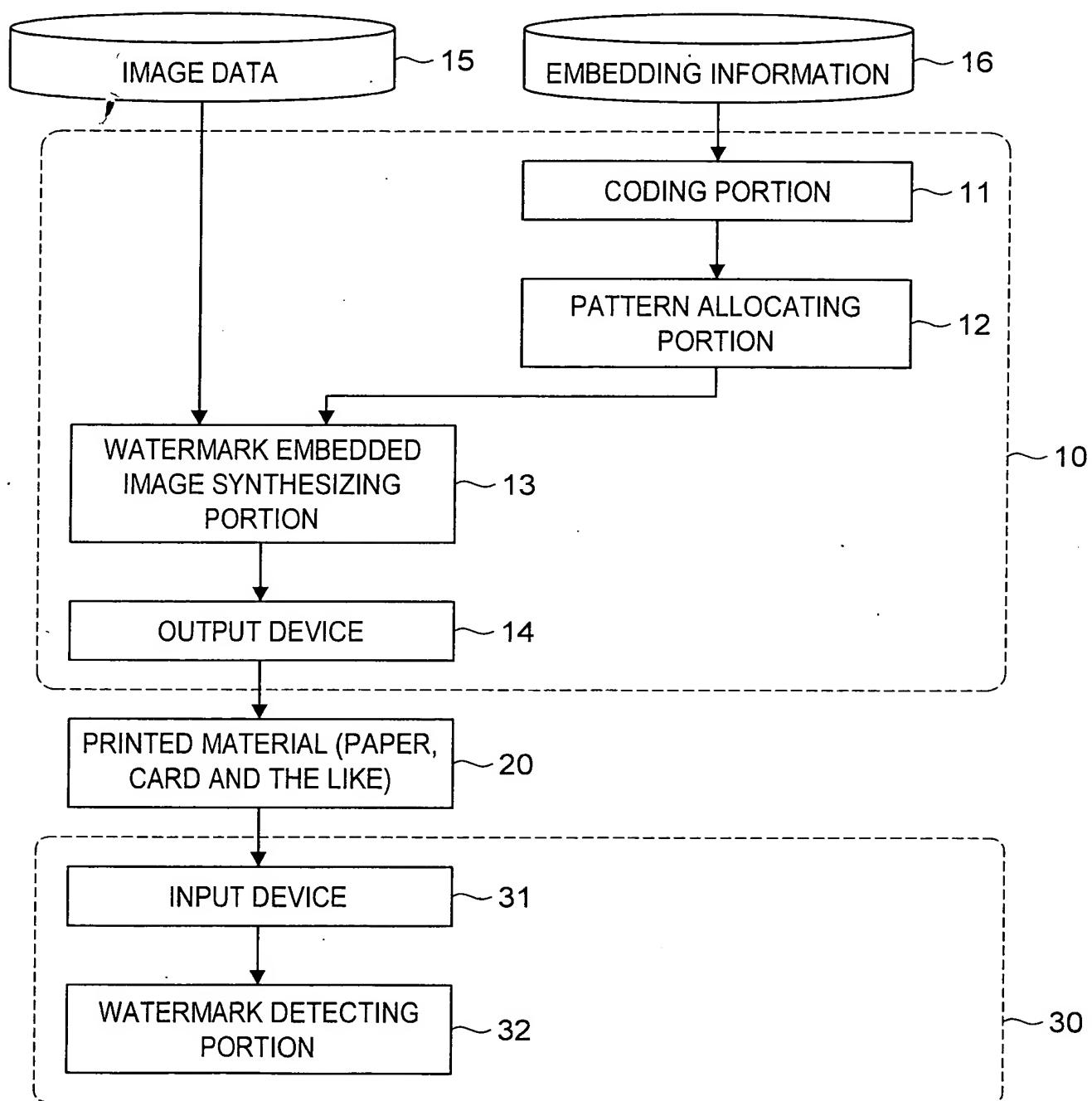


FIG.2

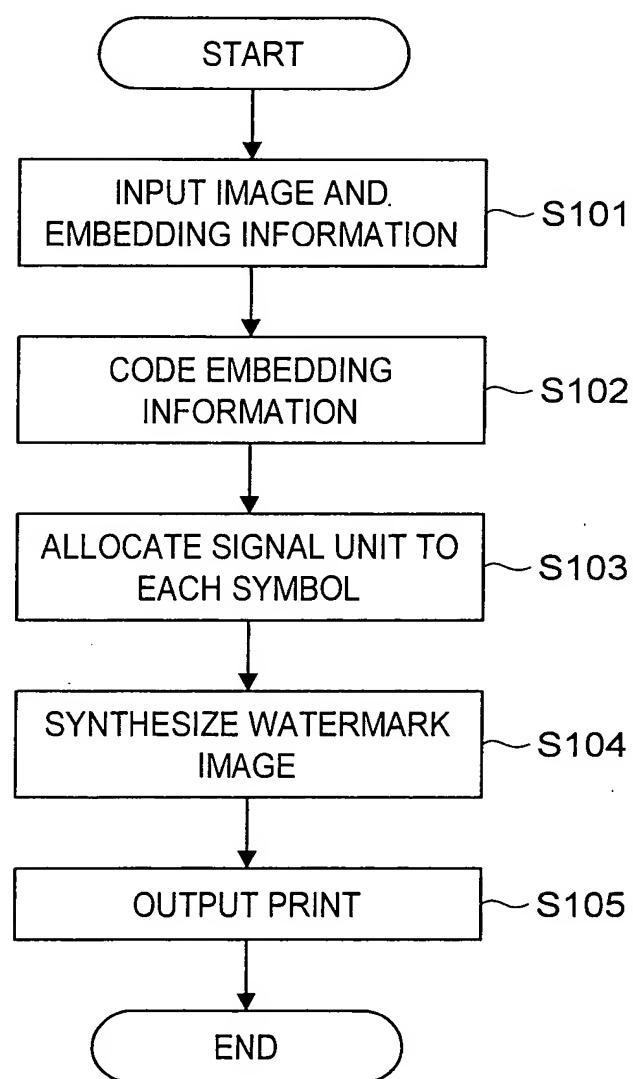


FIG.3

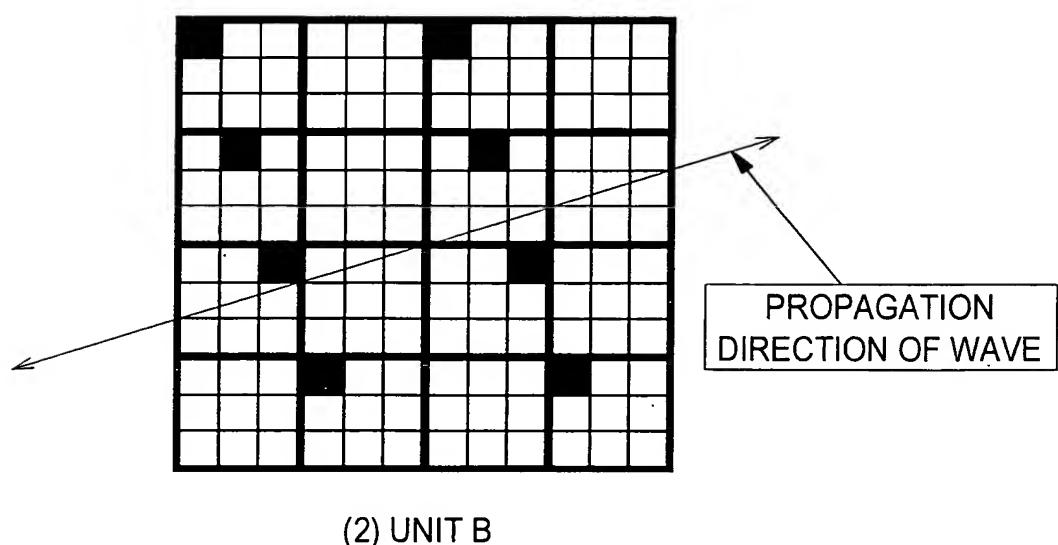
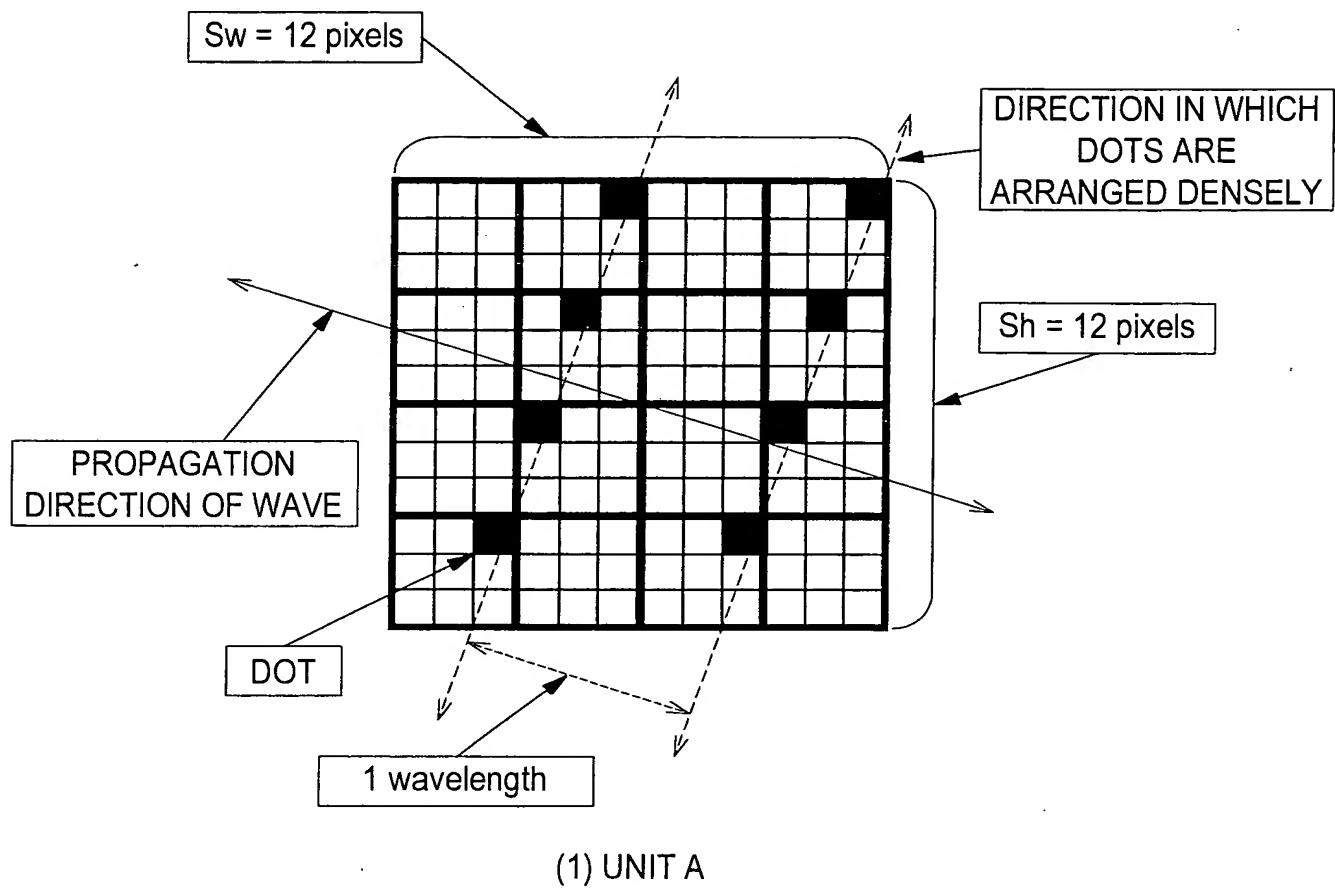


FIG.4

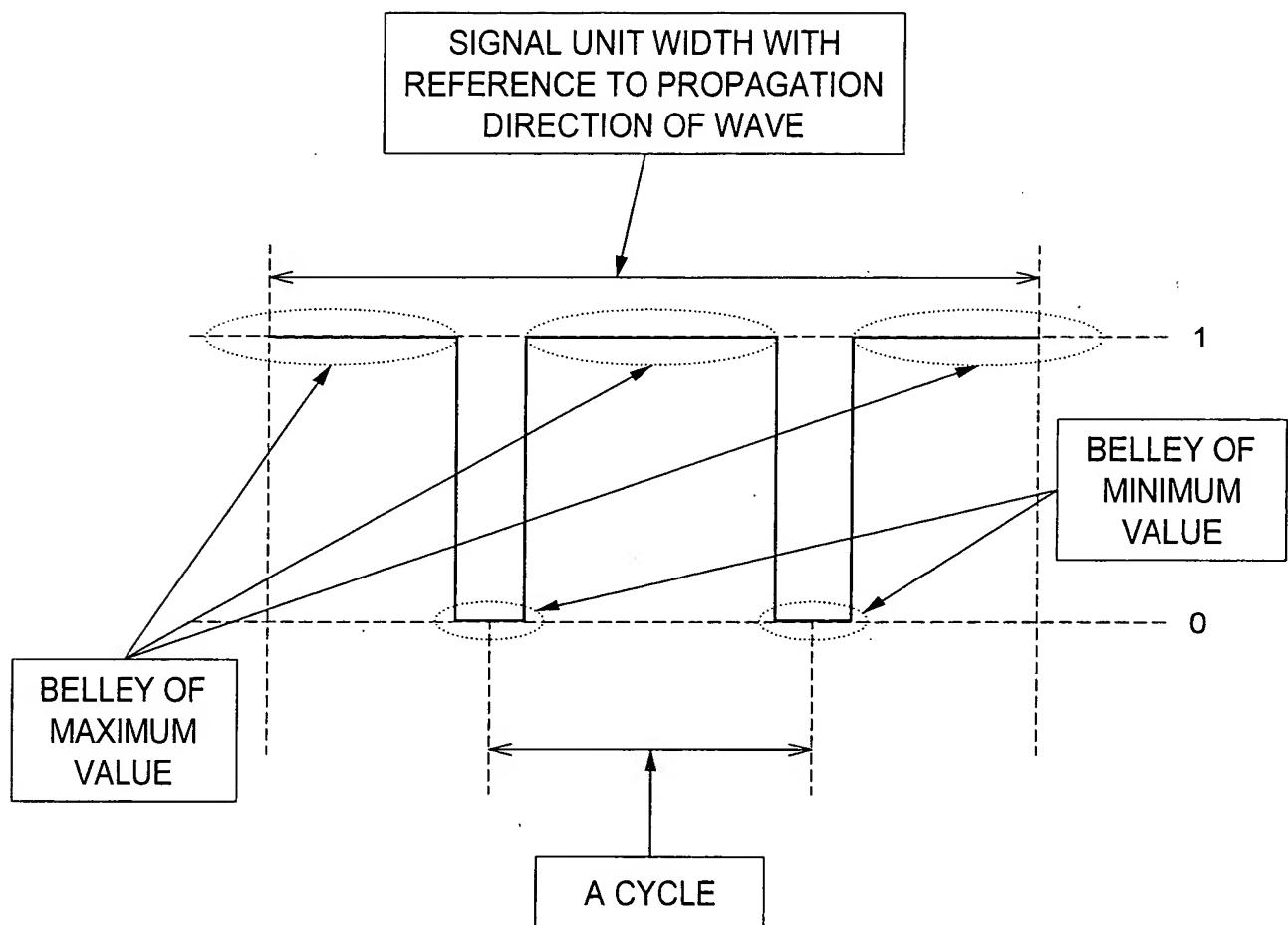
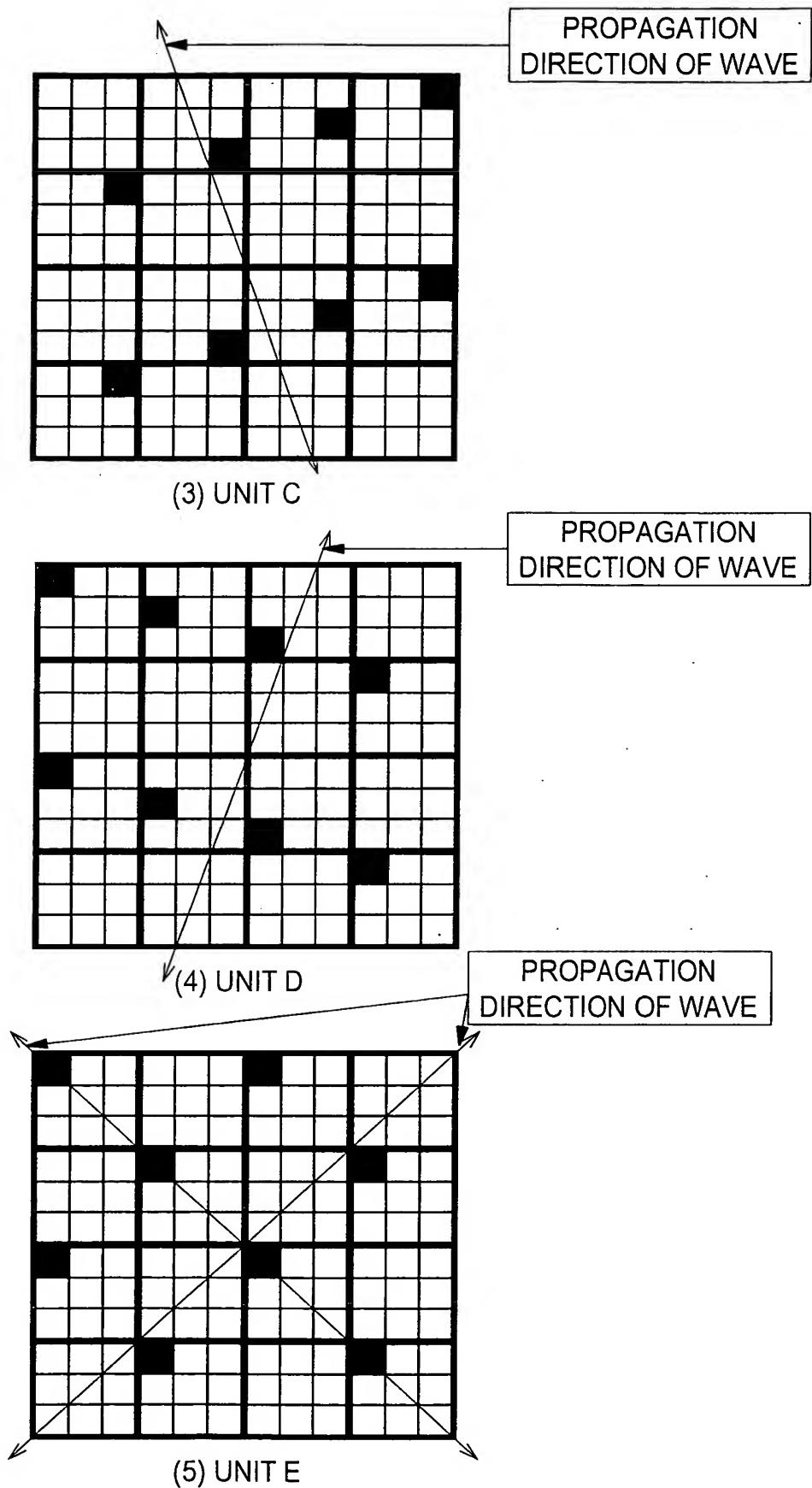
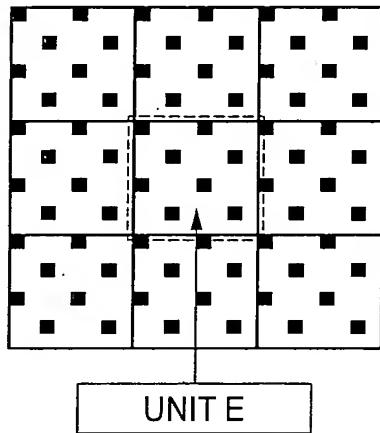


FIG.5

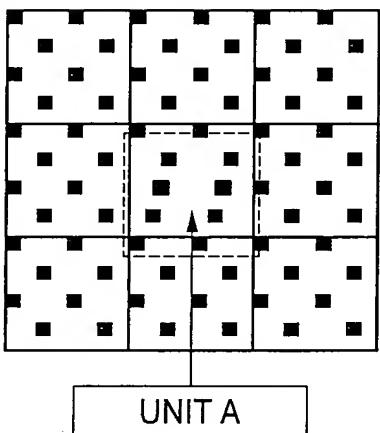


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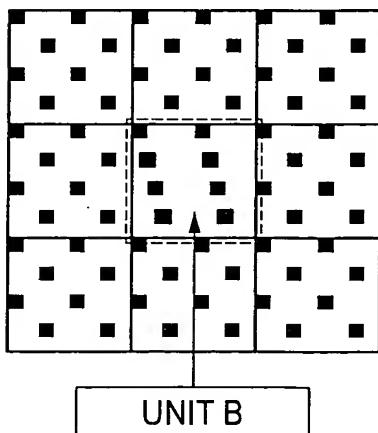
FIG.6



(1)

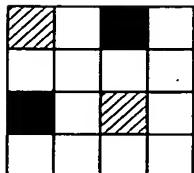
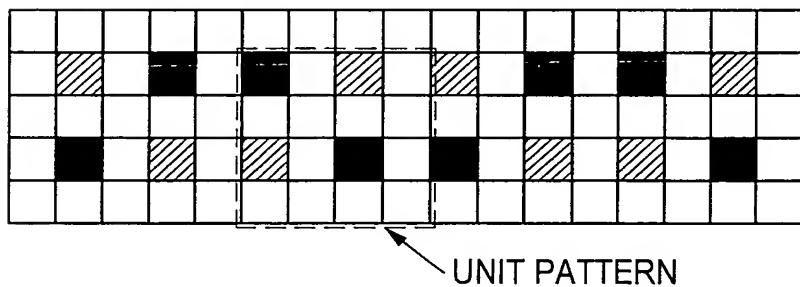
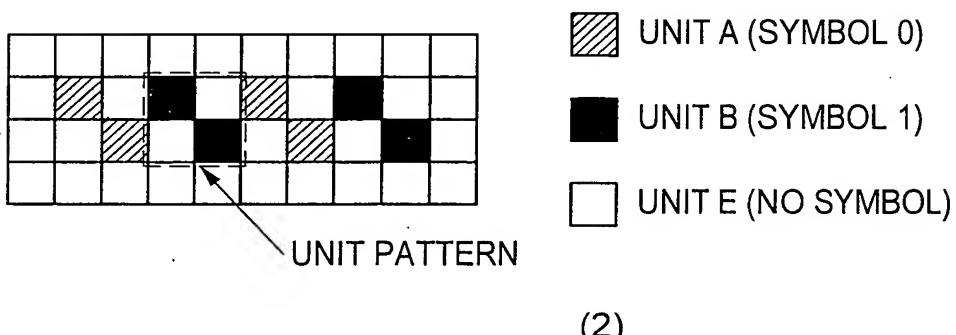
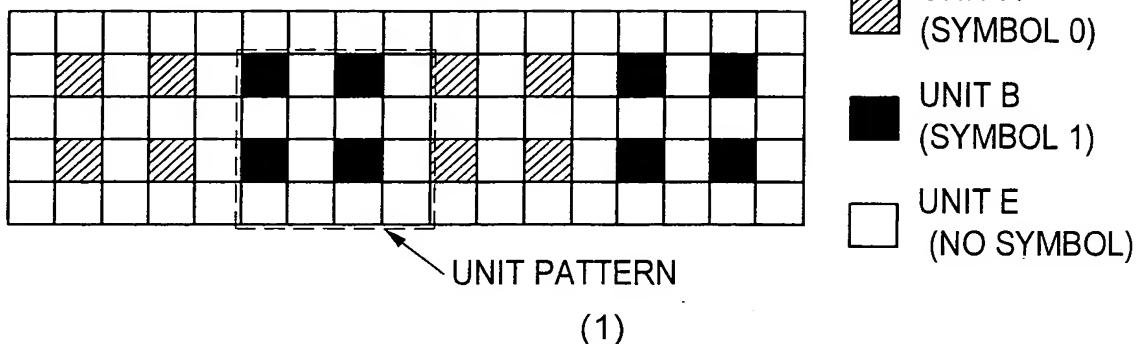


(2)

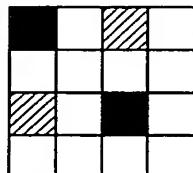


(3)

FIG.7

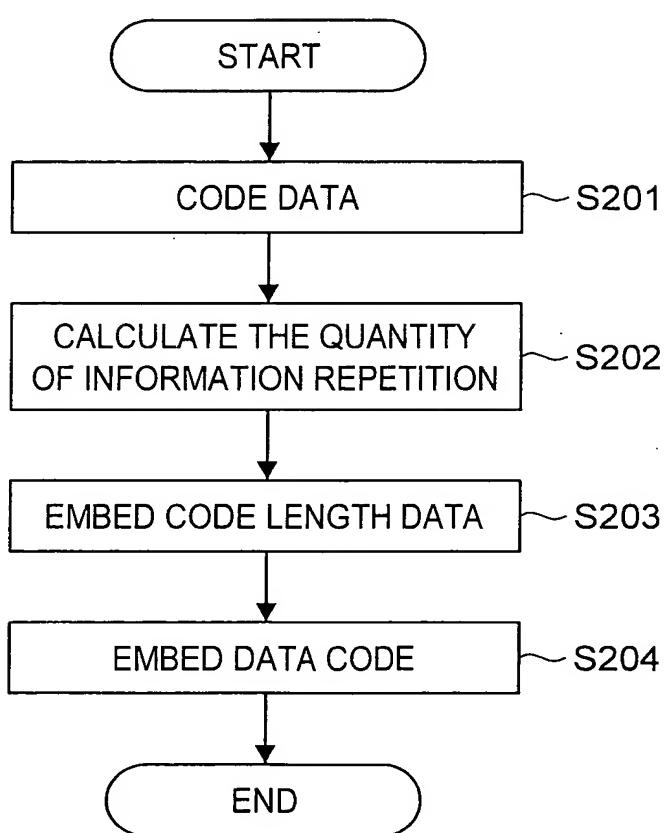


UNIT PATTERN
INDICATING SYMBOL 0



UNIT PATTERN
INDICATING SYMBOL 1

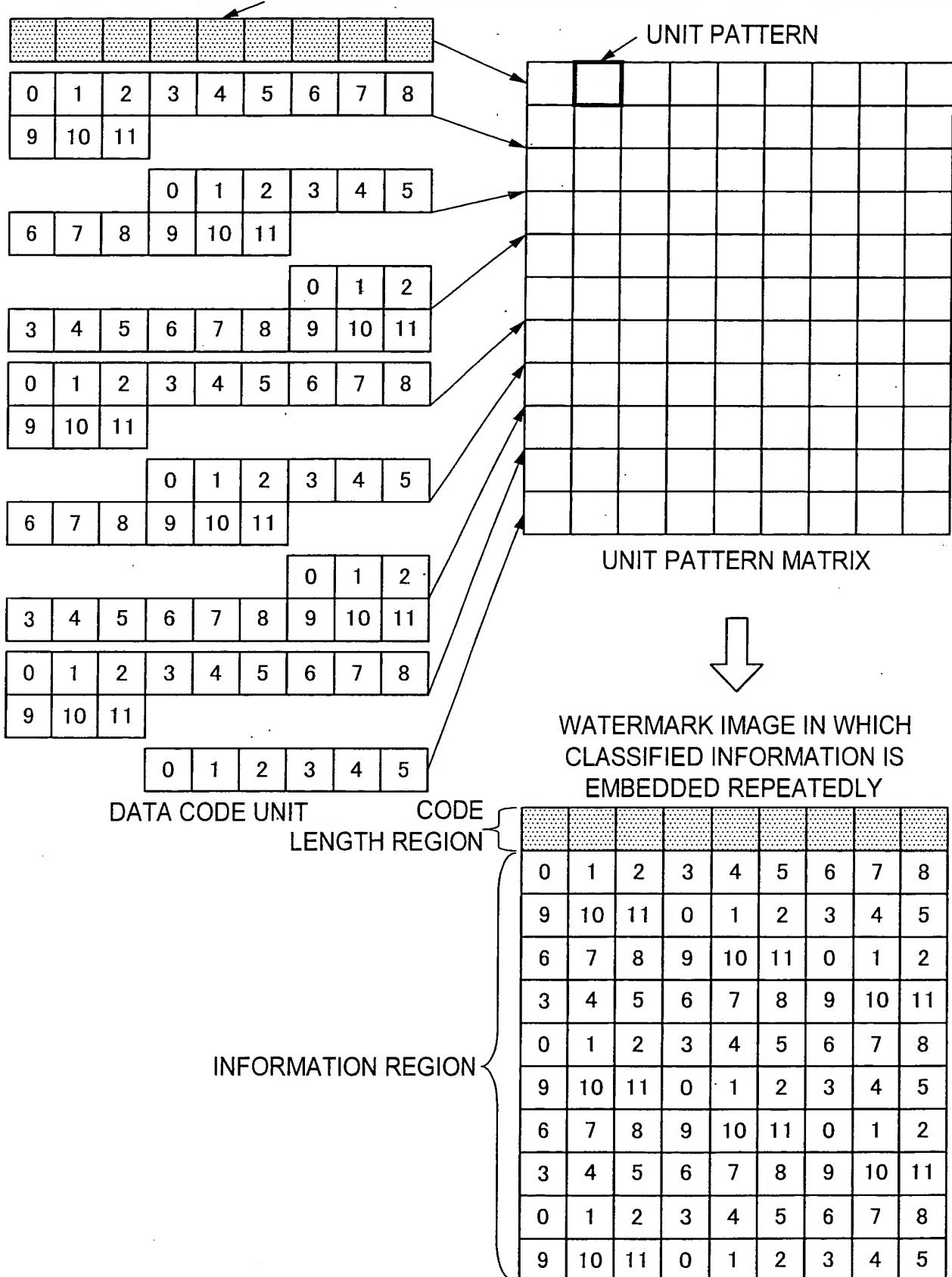
FIG.8



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FIG.9

UNIT PATTERN IN WHICH BIT STRING INDICATING CODE LENGTH IS EMBEDDED



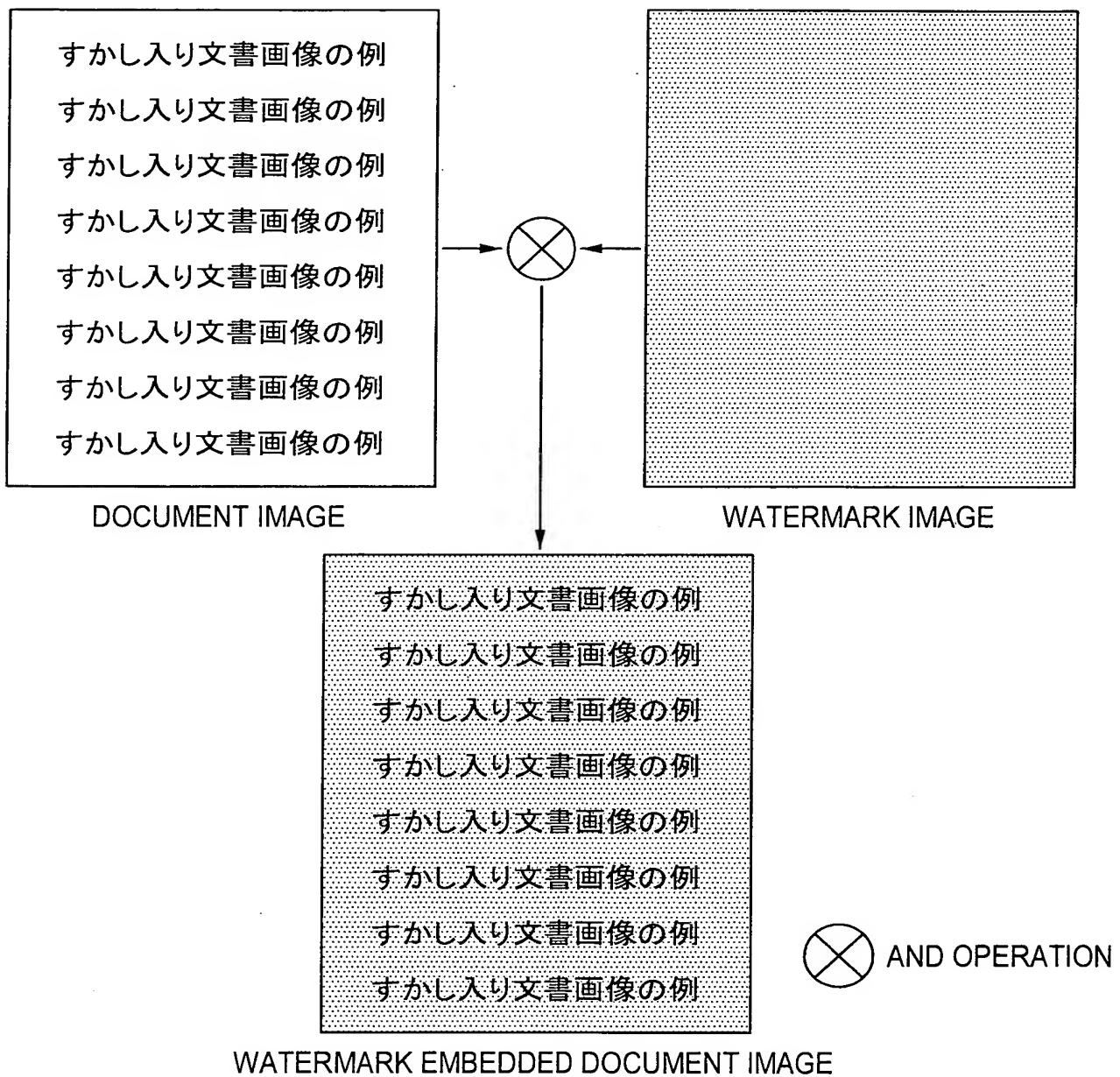
New Application: Kurato MAENO
Filed: May 1, 2006
36 sheets of drawings FIGS.1-40c
RABIN & BERDO, P.C.
Atty Docket: KAN 164NP
Customer NO.: 23995

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FIG.10

SIGNAL UNIT COLOR	COLOR ON INPUT IMAGE	COLOR ON SYNTHESIZED IMAGE
FOREGROUND COLOR	FOREGROUND COLOR	FOREGROUND COLOR OF INPUT IMAGE
foreground color	background color	foreground color of signal unit
background color	foreground color	foreground color of input image
background color	background color	background color of input image

FIG.11



New Application: Kurato MAENO
Filed: May 1, 2006
36 sheets of drawings FIGS.1-40c
RABIN & BERDO, P.C.
Atty Docket: KAN 164NP
Customer NO.: 23995

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FIG.12

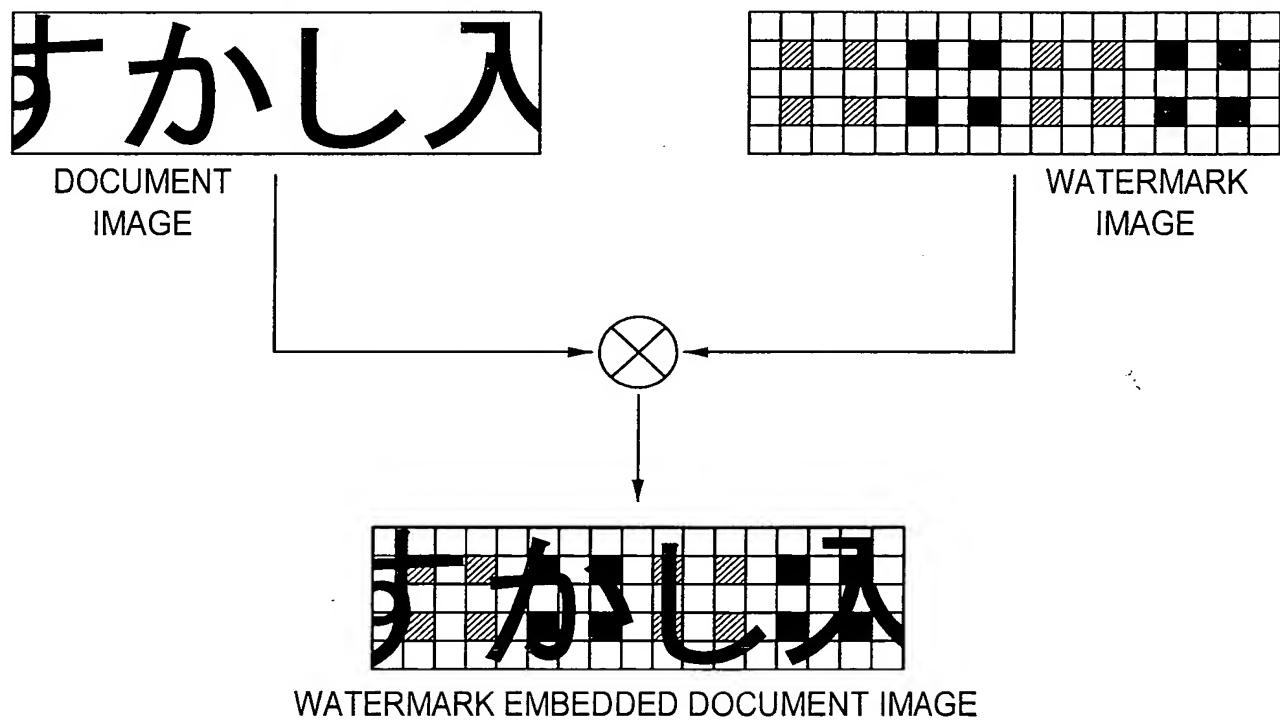
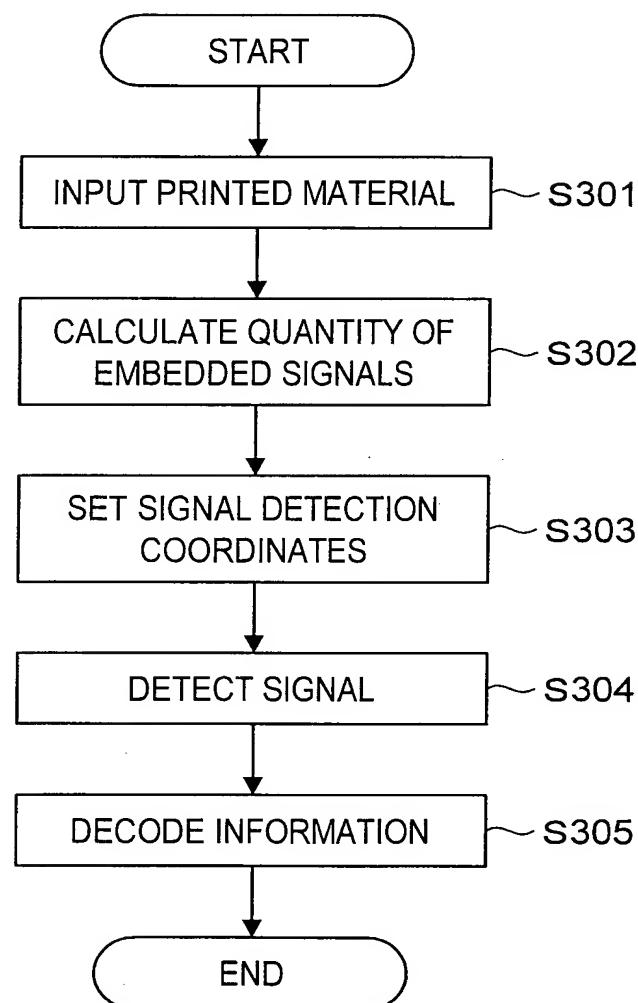
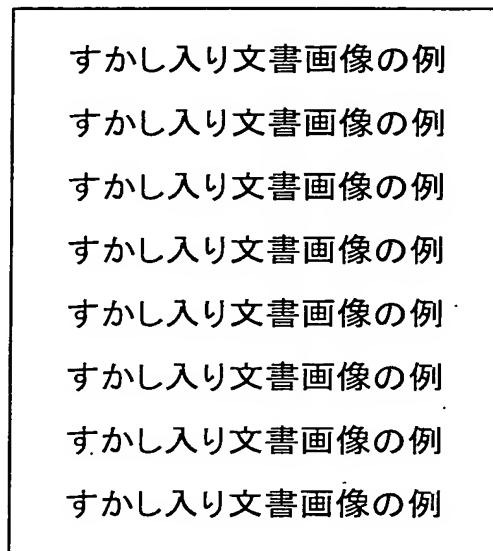


FIG.13

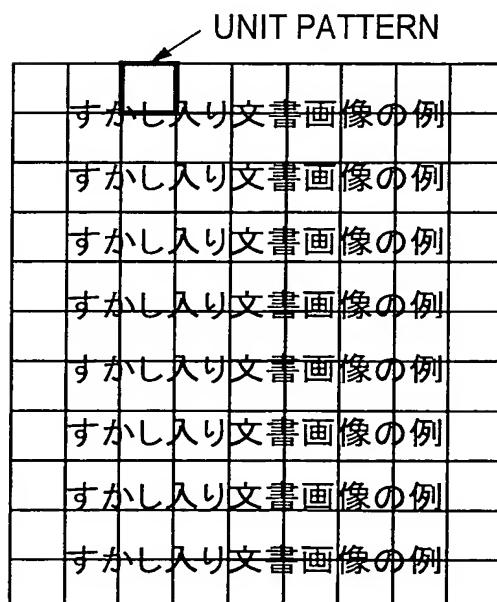


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FIG.14



INPUT IMAGE
(1)



AFTER SETTING COORDINATE
(2)

FIG.15

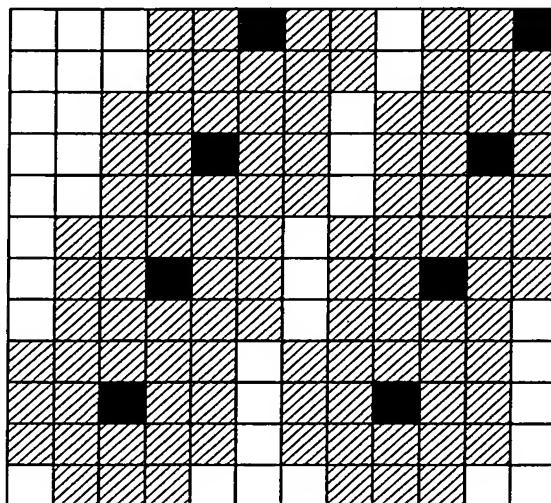


FIG.16

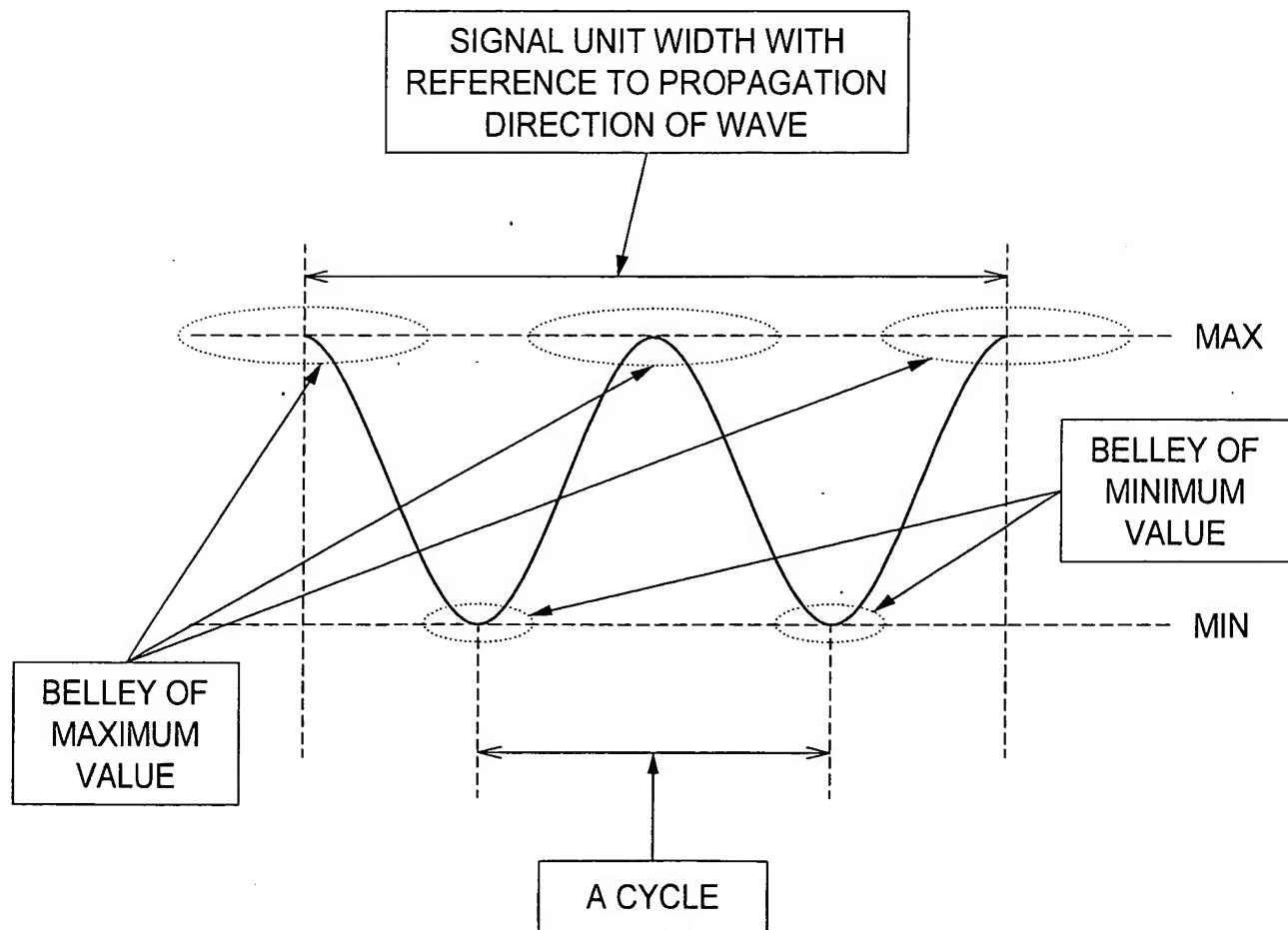


FIG.17

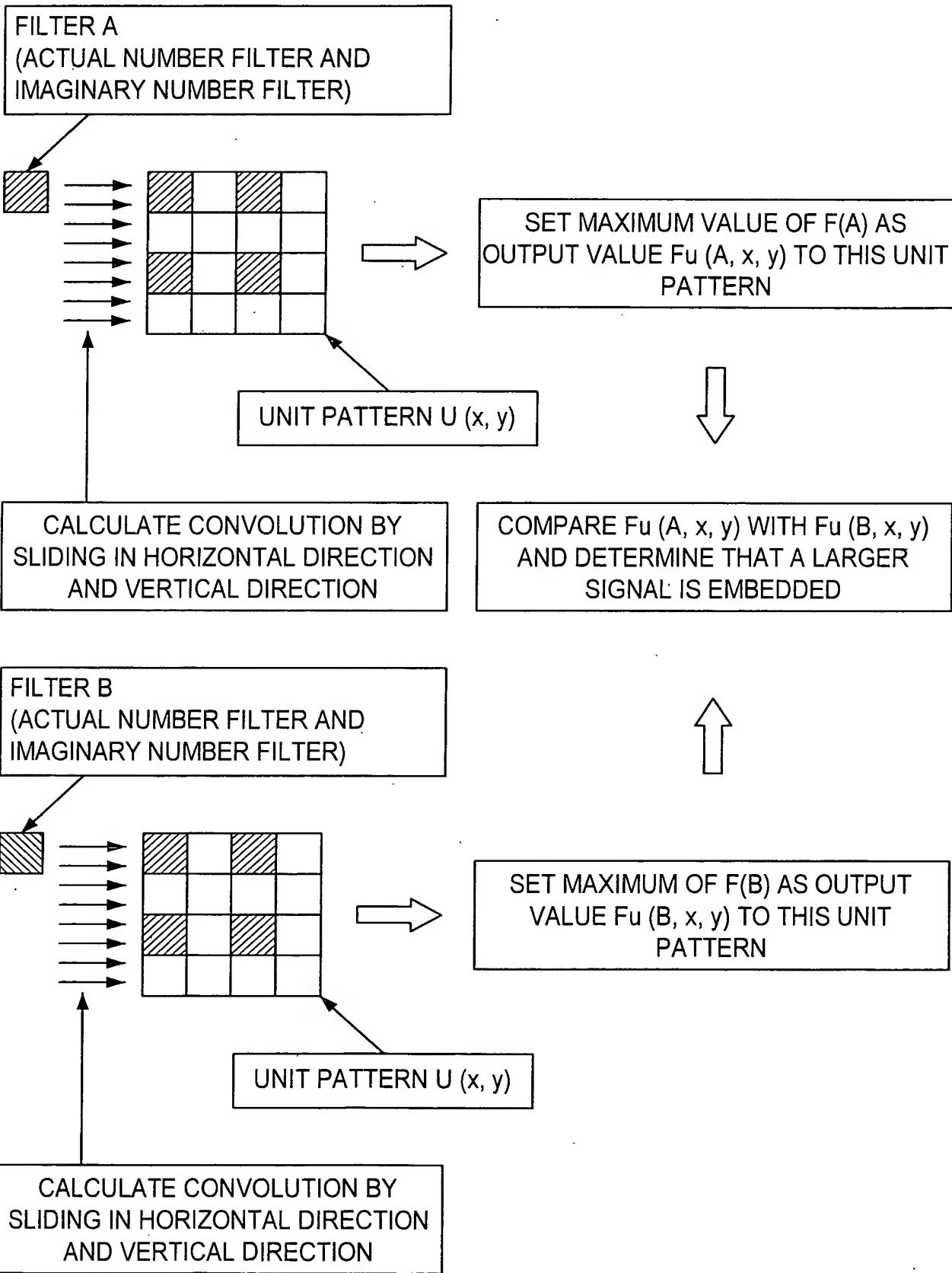
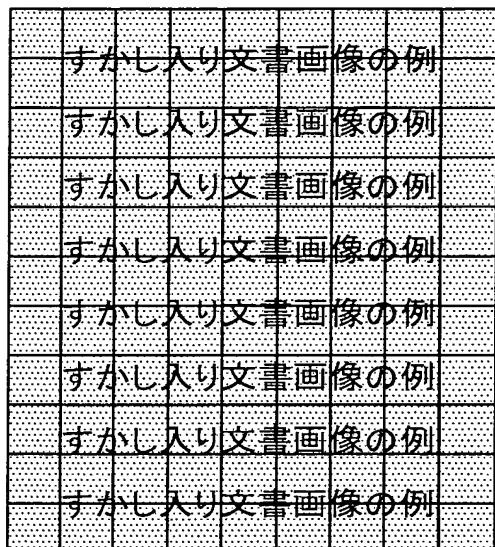


FIG.18



(1)
DETECTING
SYMBOL
→

0	1	0	1	0	1	0	1	0
0	1	0	1	0	1	0	1	0
0	1	0	1	0	1	0	1	0
0	1	0	1	0	1	0	1	0
0	1	0	1	0	1	0	1	0
0	1	0	1	0	1	0	1	0
0	1	0	1	0	1	0	1	0
0	1	0	1	0	1	0	1	0
0	1	0	1	0	1	0	1	0
0	1	0	1	0	1	0	1	0

↓ (2)
DECODING DATA CODE

CLASSIFIED INFORMATION



010101.....010101

(3) DECODING AND INFORMATION FETCHING OUT

FIG.19

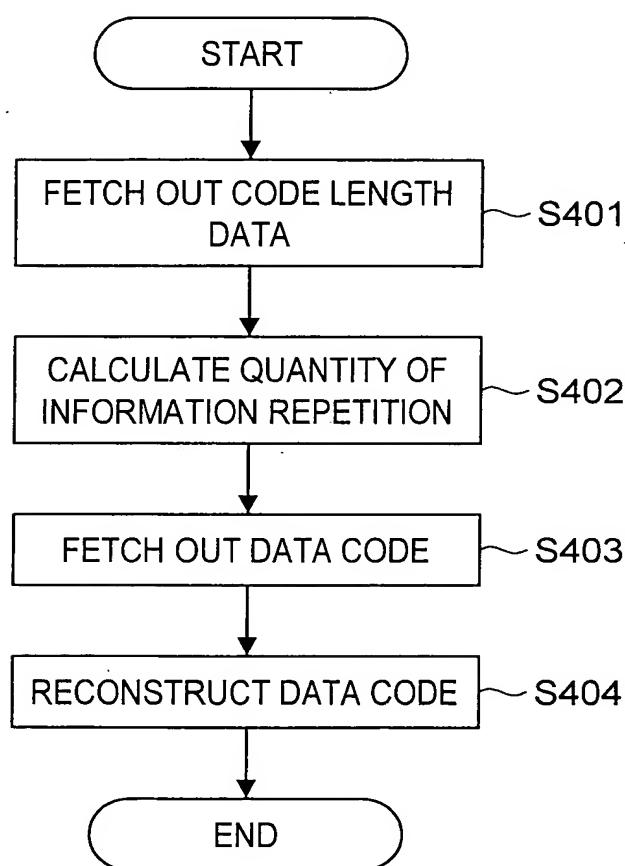
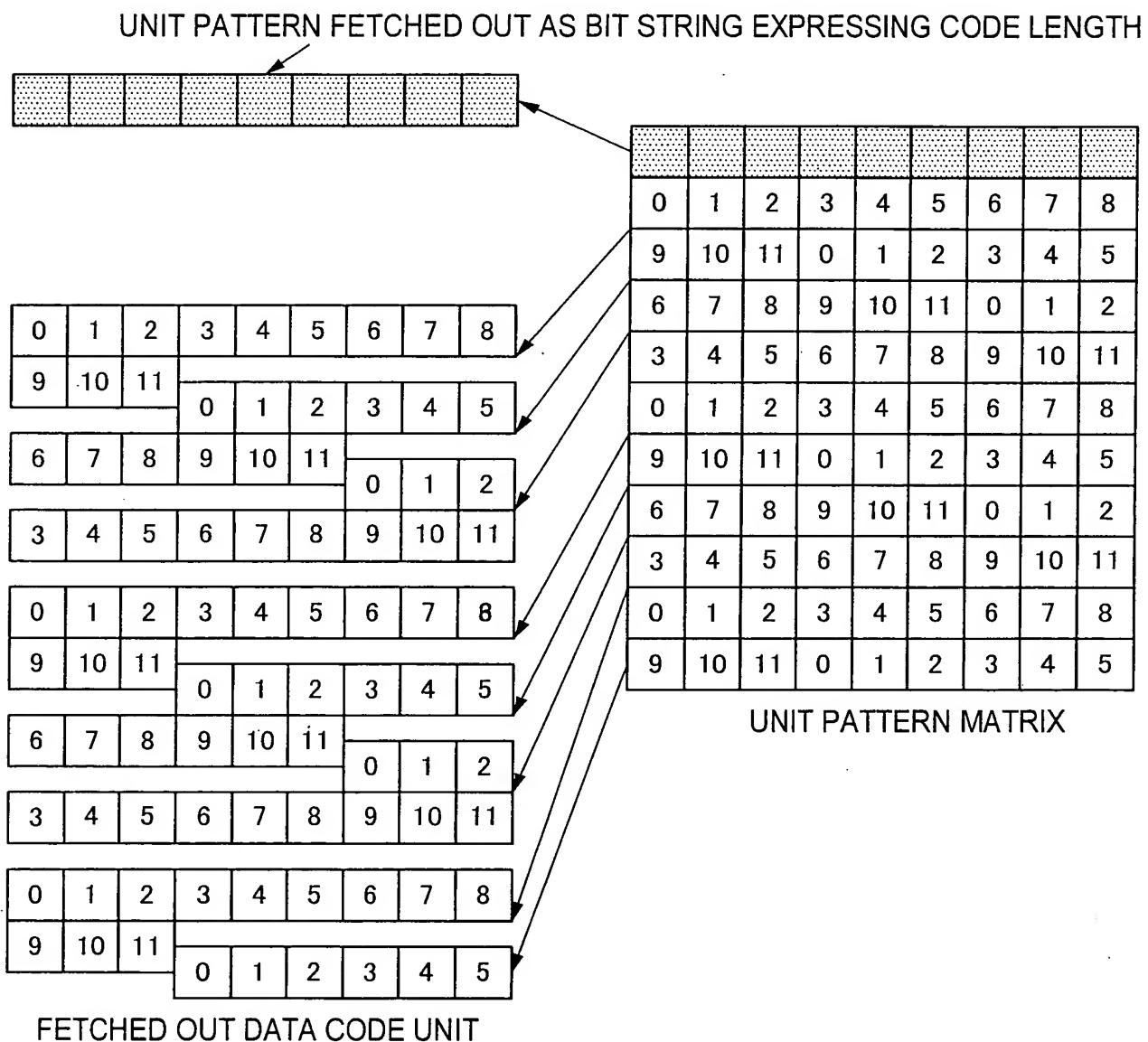
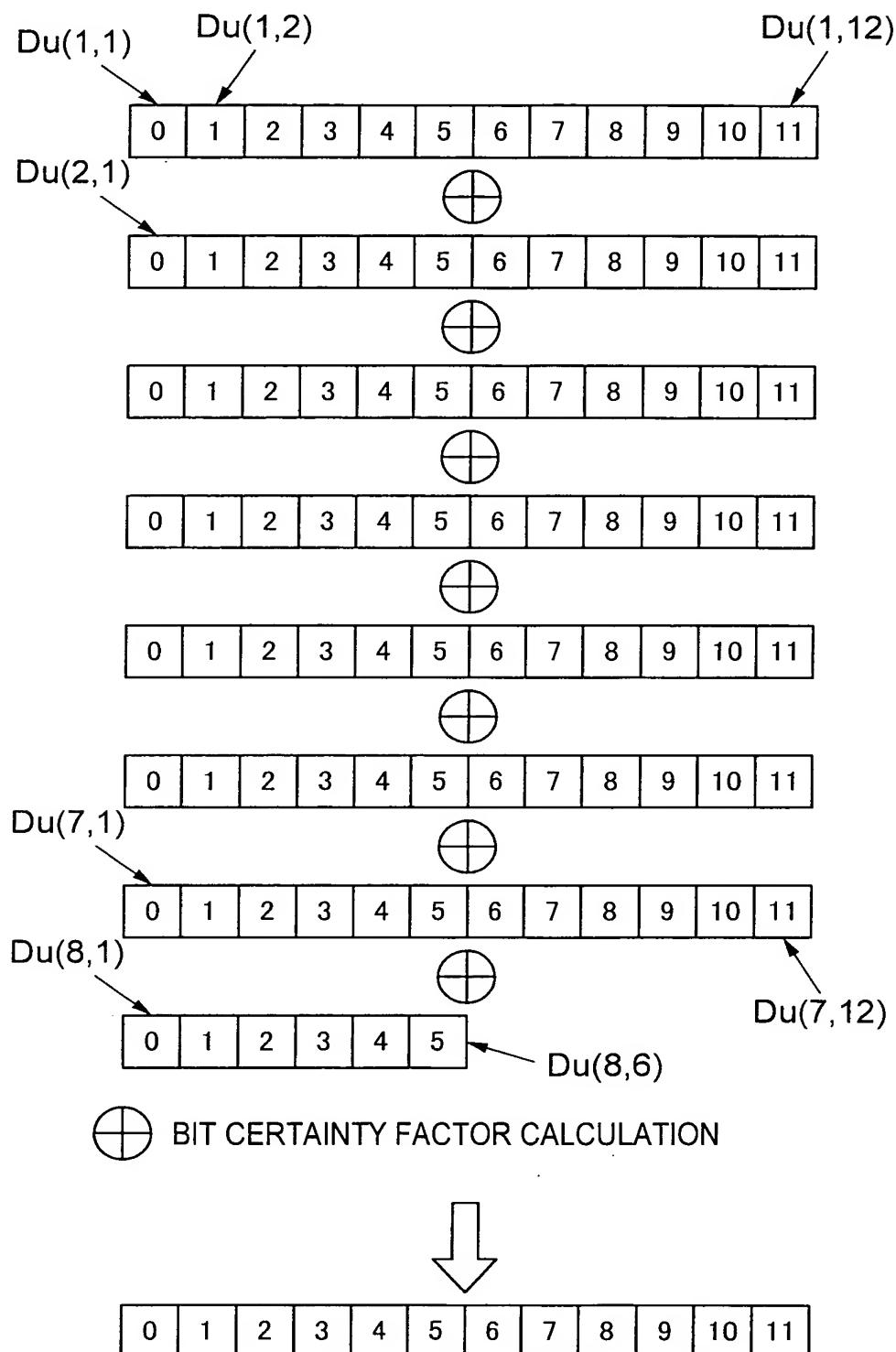


FIG.20



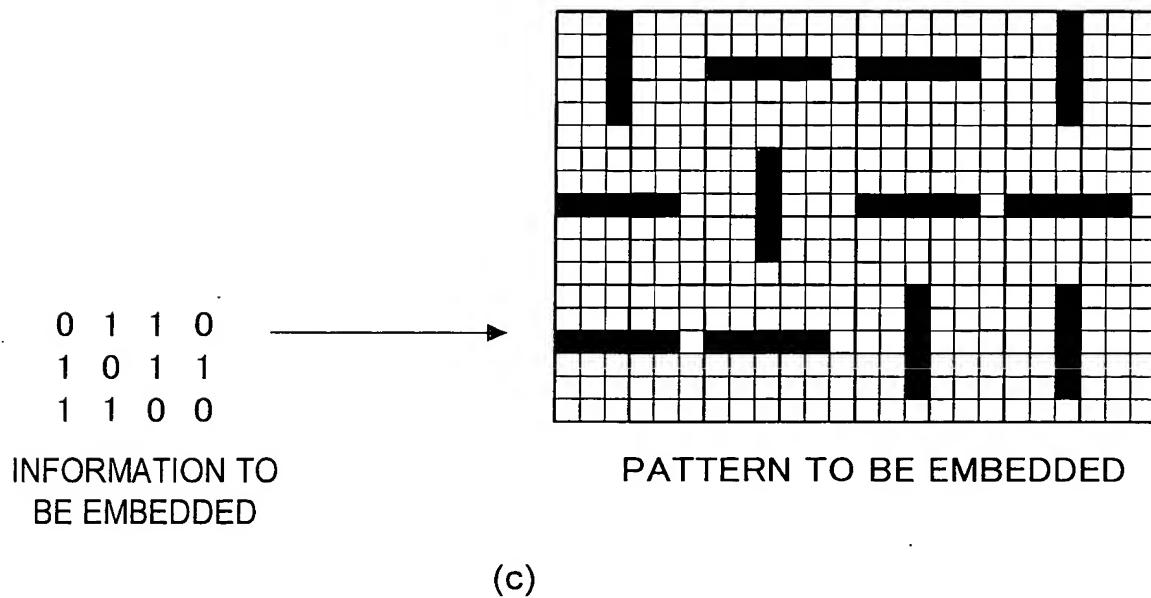
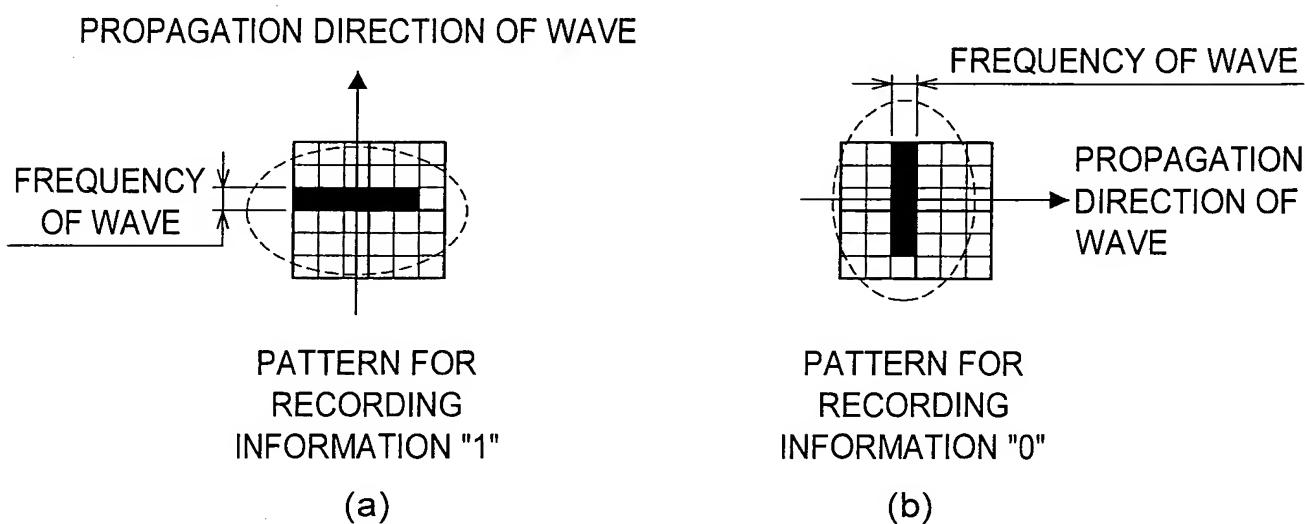
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FIG.21



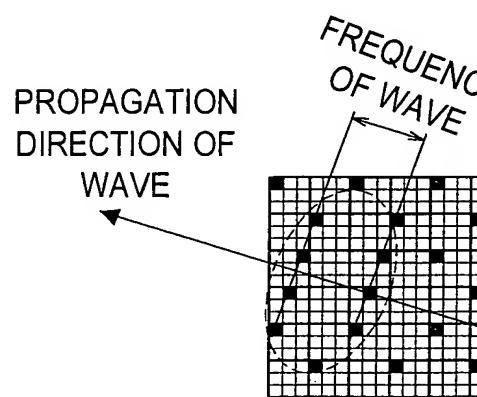
BIT STRING RECONSTRUCTED BY
 CERTAINTY FACTOR CALCULATION
 (DATA CODE)

FIG.22



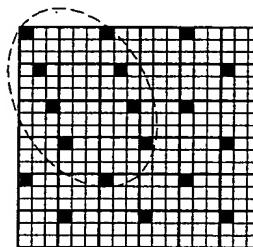
BEST AVAILABLE COPY

FIG.23



PATTERN FOR RECORDING INFORMATION "1"

(a)

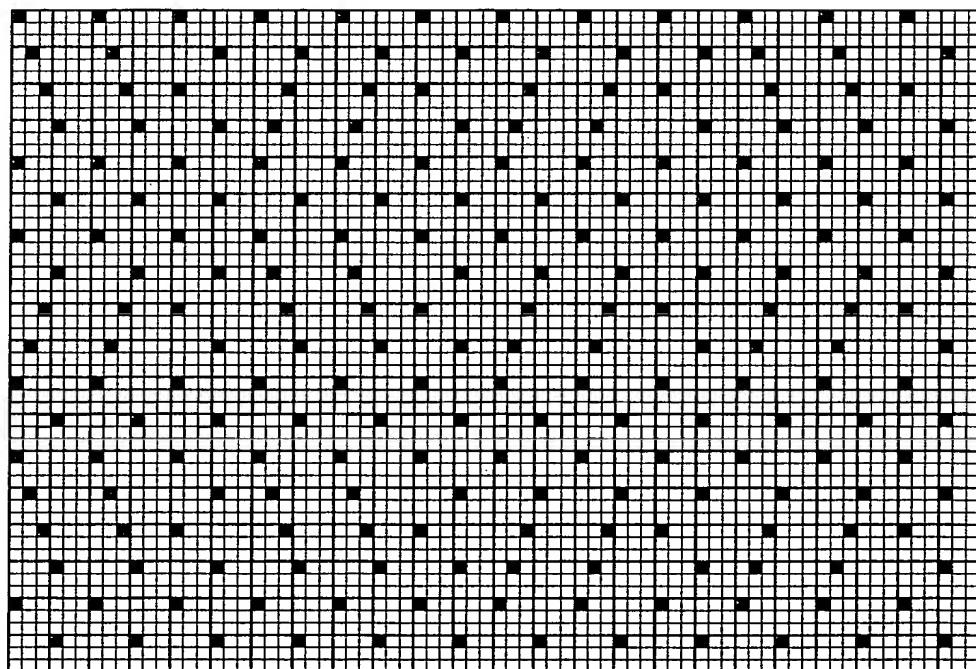


PATTERN FOR RECORDING INFORMATION "0"

(b)

0 1 1 0
1 0 1 1
1 1 0 0

INFORMATION TO BE EMBEDDED

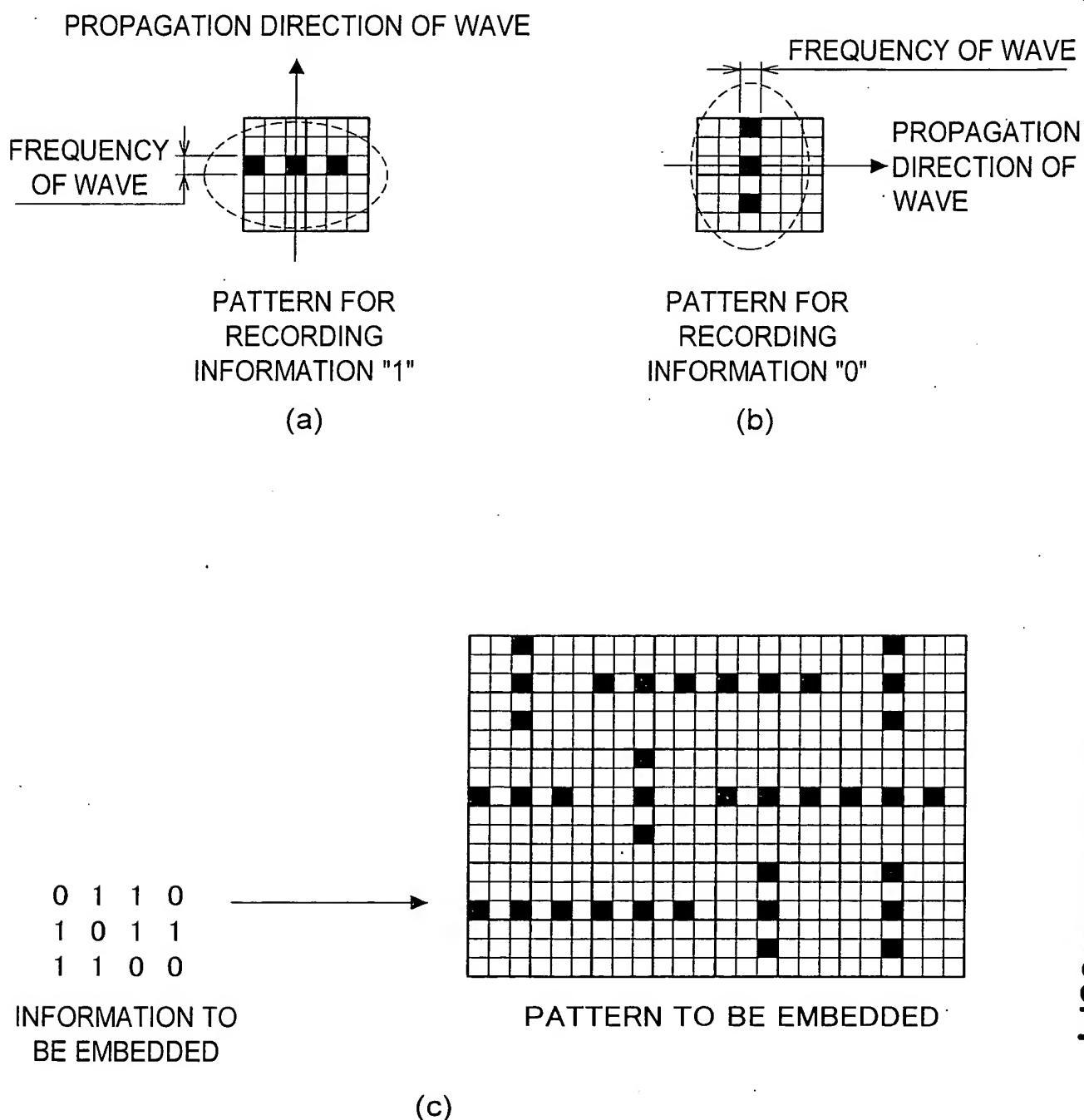


PATTERN TO BE EMBEDDED

(c)

BEST AVAILABLE COPY

FIG.24



BEST AVAILABLE COPY

FIG.25

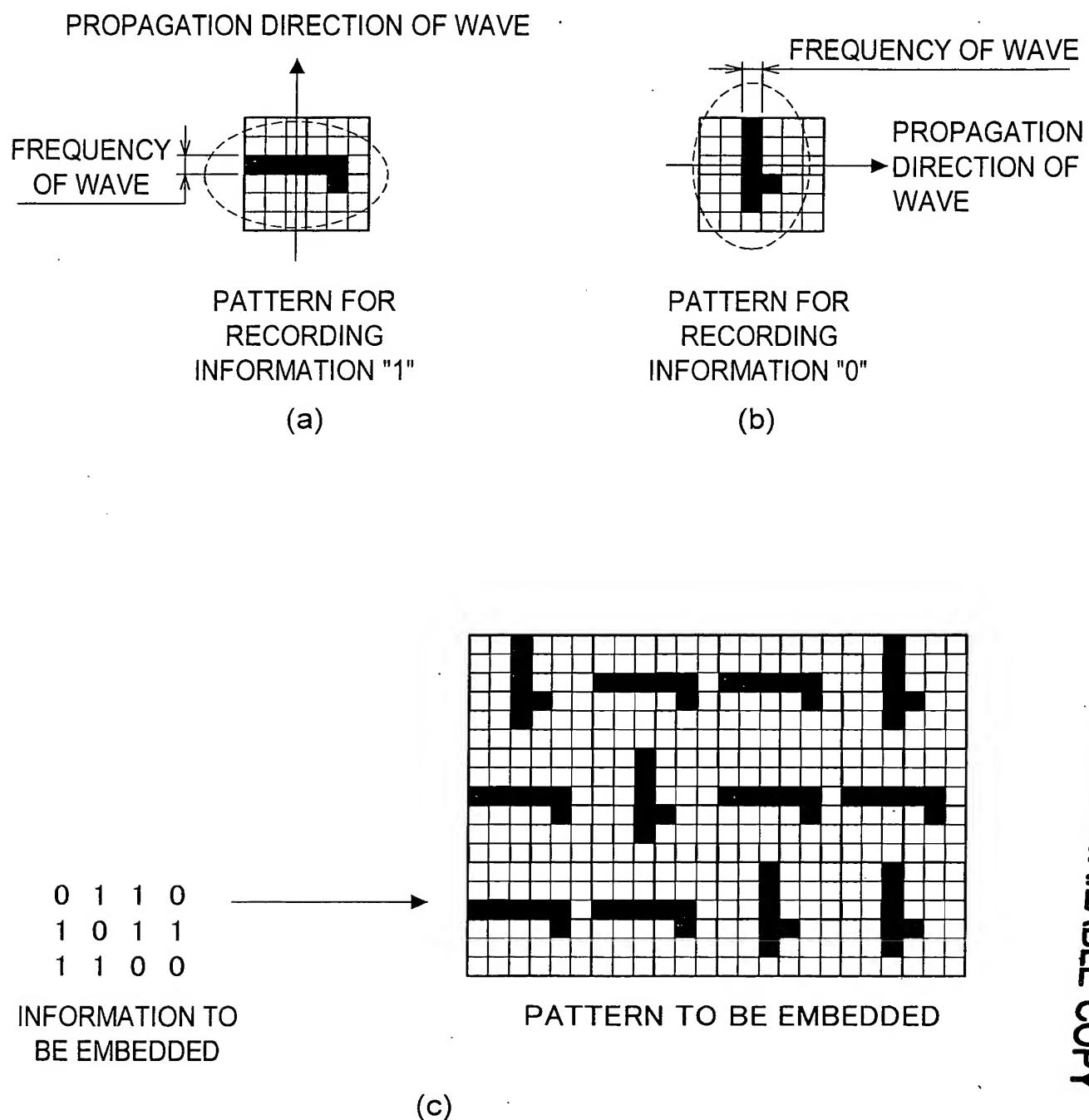
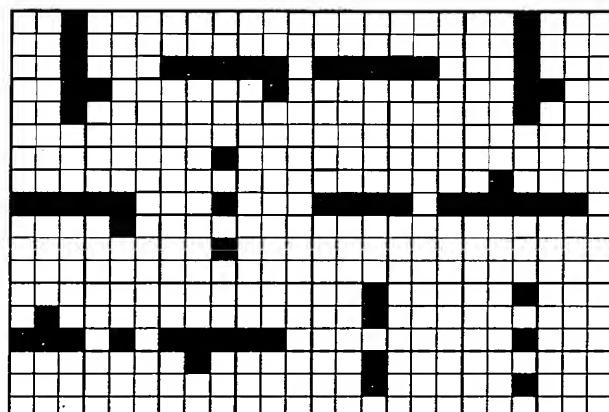


FIG.26

PATTERN CHANGE-OVER
INFORMATION
(OR RANDOM NUMBER)

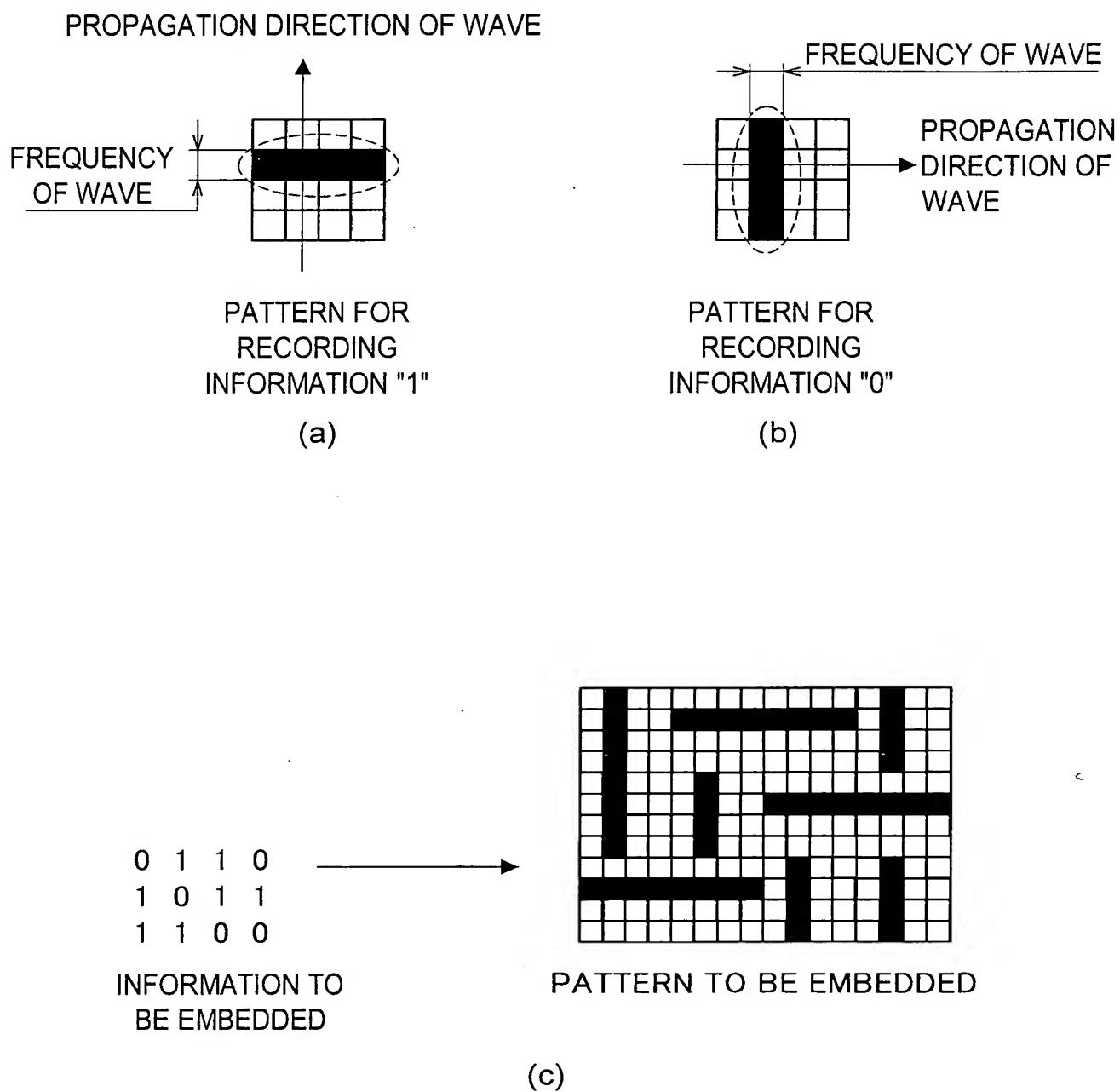
0 1 1 0
1 0 1 1
1 1 0 0

INFORMATION TO
BE EMBEDDED



PATTERN TO BE EMBEDDED

FIG.27



BEST AVAILABLE COPY

FIG.28

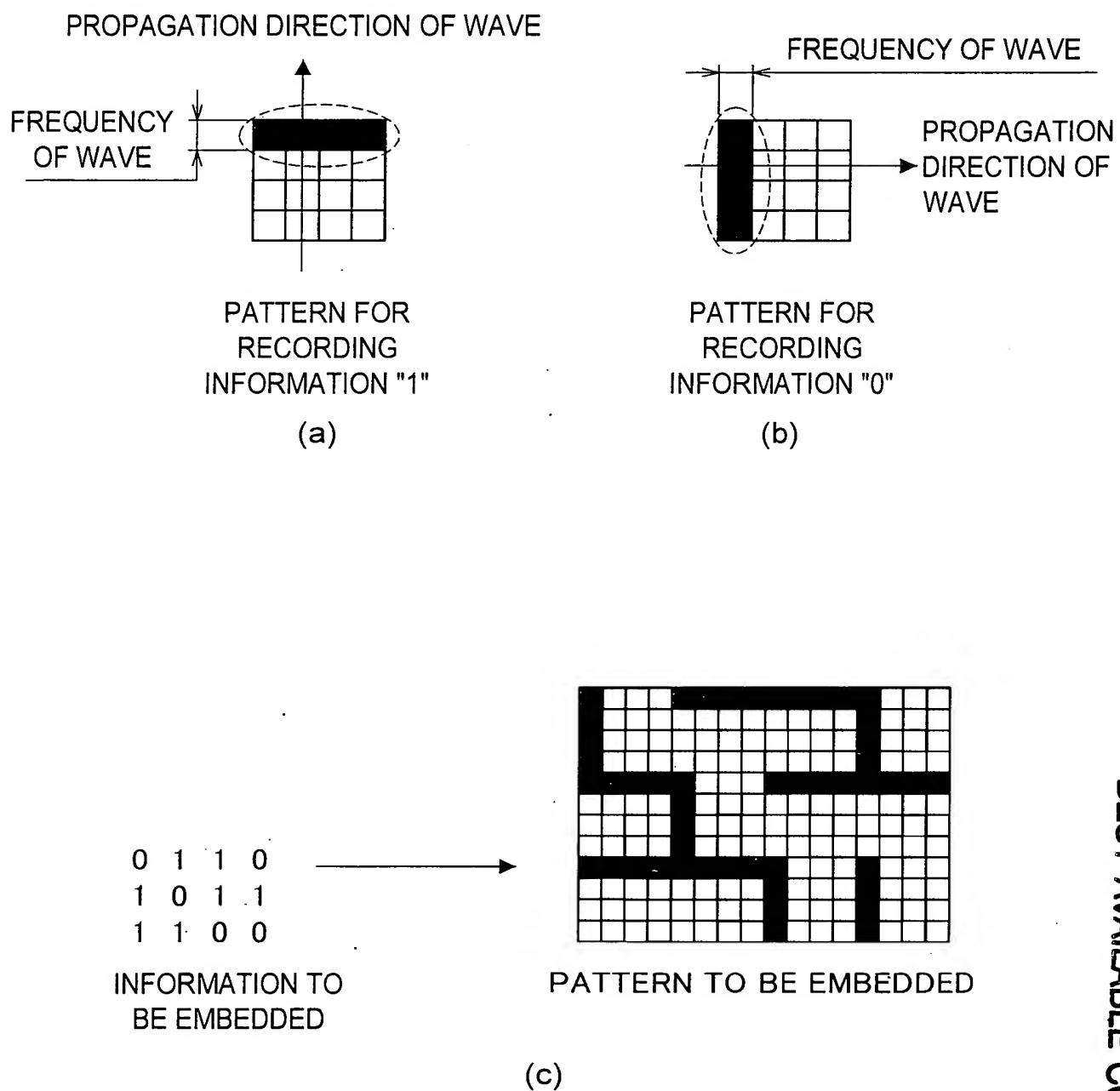
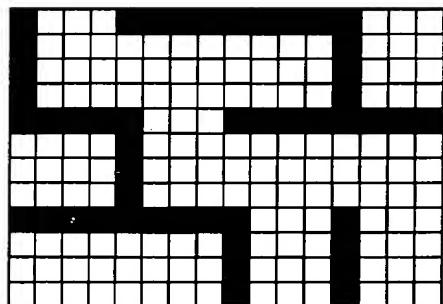
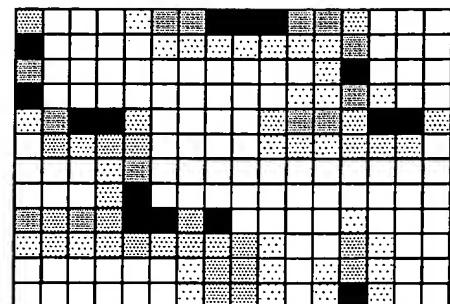
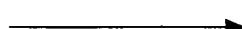


FIG.29



PATTERN TO BE EMBEDDED



PATTERN OBTAINED BY
PRINTING/SCANNING

FIG.30

$P_{0,0}$	$P_{1,0}$	$P_{2,0}$	$P_{3,0}$
$P_{0,1}$	$P_{1,1}$	$P_{2,1}$	$P_{3,1}$
$P_{0,2}$	$P_{1,2}$	$P_{2,2}$	$P_{3,2}$
$P_{0,3}$	$P_{1,3}$	$P_{2,3}$	$P_{3,3}$

FILTER
PROCESSING MASK

(a)

$P_{0,0}$	$P_{1,0}$	$P_{2,0}$	$P_{3,0}$
$P_{0,1}$	$P_{1,1}$	$P_{2,1}$	$P_{3,1}$
$P_{0,2}$	$P_{1,2}$	$P_{2,2}$	$P_{3,2}$
$P_{0,3}$	$P_{1,3}$	$P_{2,3}$	$P_{3,3}$

PATTERN IN WHICH
FILTER OUTPUT IS
POSITIVE

(b)

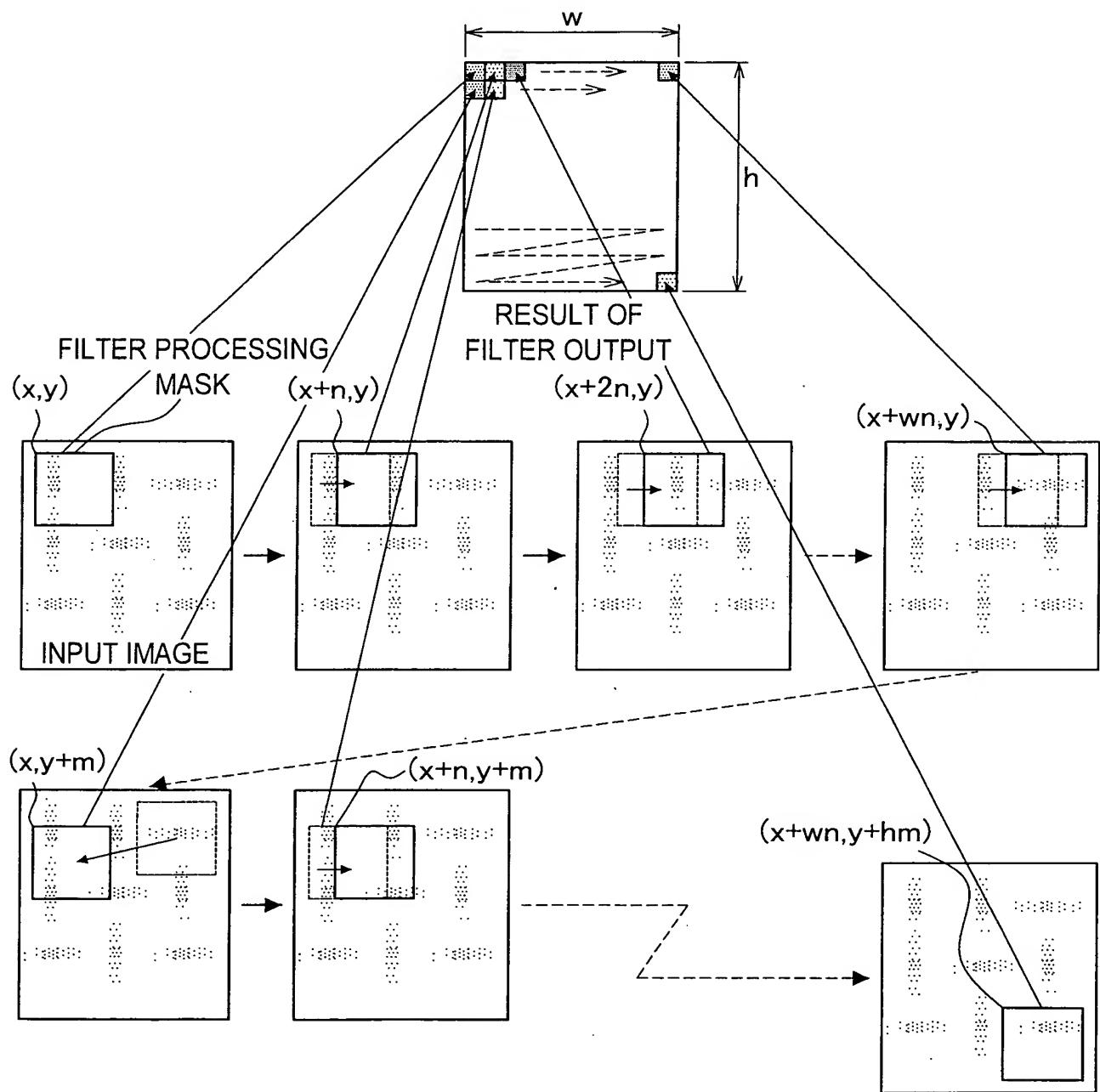
$P_{0,0}$	$P_{1,0}$	$P_{2,0}$	$P_{3,0}$
$P_{0,1}$	$P_{1,1}$	$P_{2,1}$	$P_{3,1}$
$P_{0,2}$	$P_{1,2}$	$P_{2,2}$	$P_{3,2}$
$P_{0,3}$	$P_{1,3}$	$P_{2,3}$	$P_{3,3}$

PATTERN IN WHICH
FILTER OUTPUT IS
NEGATIVE

(c)

BEST AVAILABLE COPY

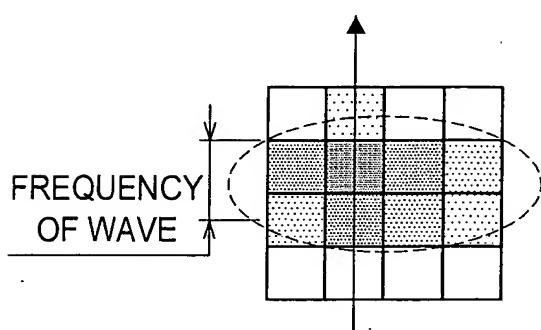
FIG.31



BEST AVAILABLE COPY

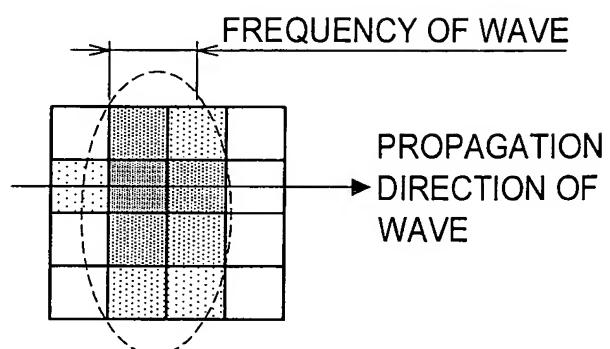
FIG.32

PROPAGATION DIRECTION OF WAVE



PATTERN FOR
RECORDING
INFORMATION "1"

(a)

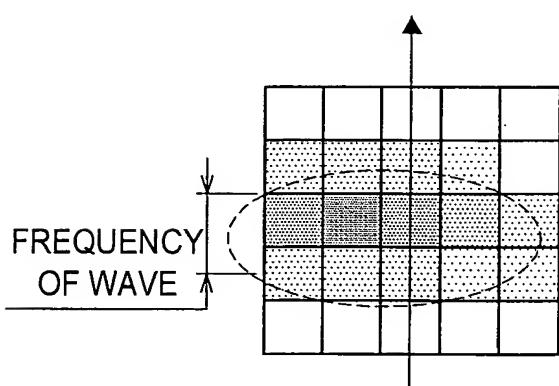


PATTERN FOR
RECORDING
INFORMATION "0"

(b)

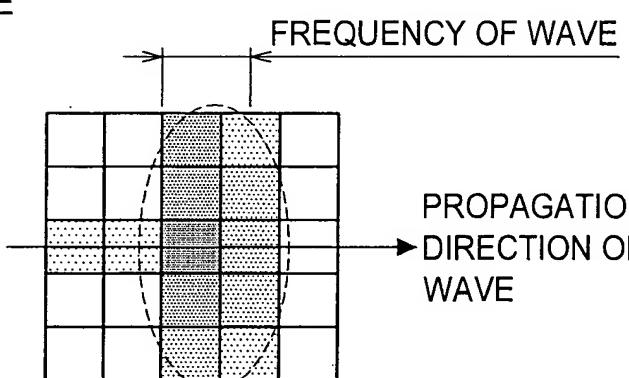
FIG.33

PROPAGATION DIRECTION OF WAVE



PATTERN FOR
RECORDING
INFORMATION "1"

(a)



PATTERN FOR
RECORDING
INFORMATION "0"

(b)

FIG.34

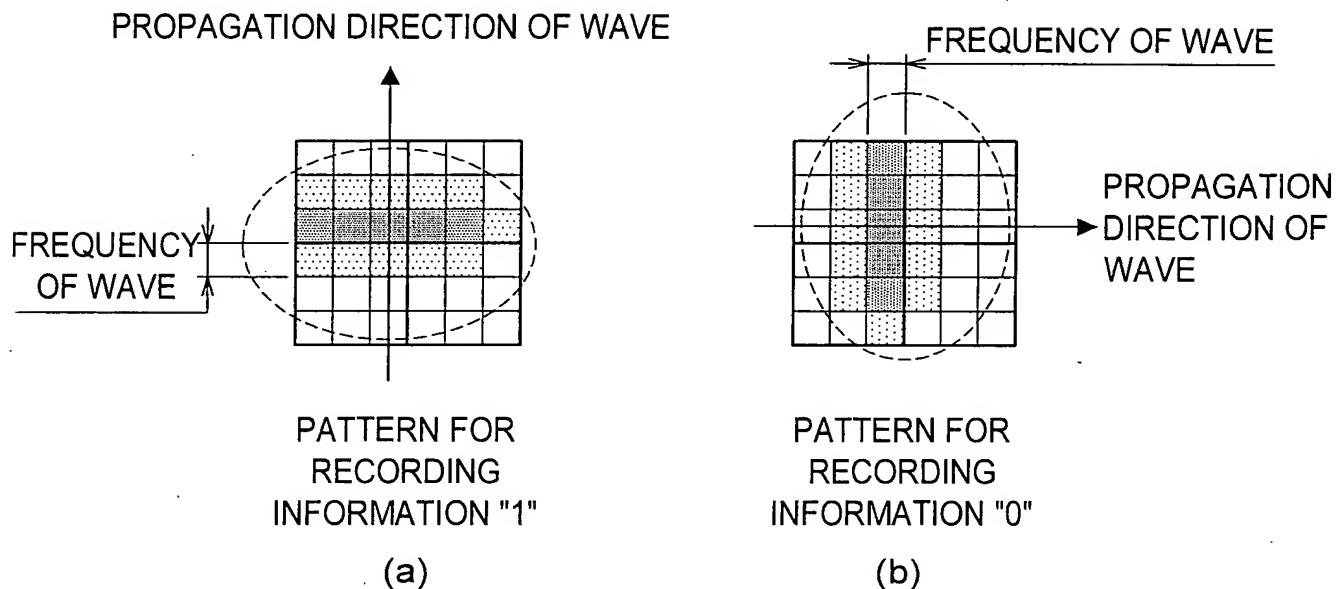


FIG.35

$P_{0,0}$	$P_{1,0}$	$P_{2,0}$
$P_{0,1}$	$P_{1,1}$	$P_{2,1}$
$P_{0,2}$	$P_{1,2}$	$P_{2,2}$

FILTER PROCESSING MASK

(a)

$P_{0,0}$	$P_{1,0}$	$P_{2,0}$
$P_{0,1}$	$P_{1,1}$	$P_{2,1}$
$P_{0,2}$	$P_{1,2}$	$P_{2,2}$

PATTERN IN WHICH FILTER OUTPUT IS POSITIVE

(b)

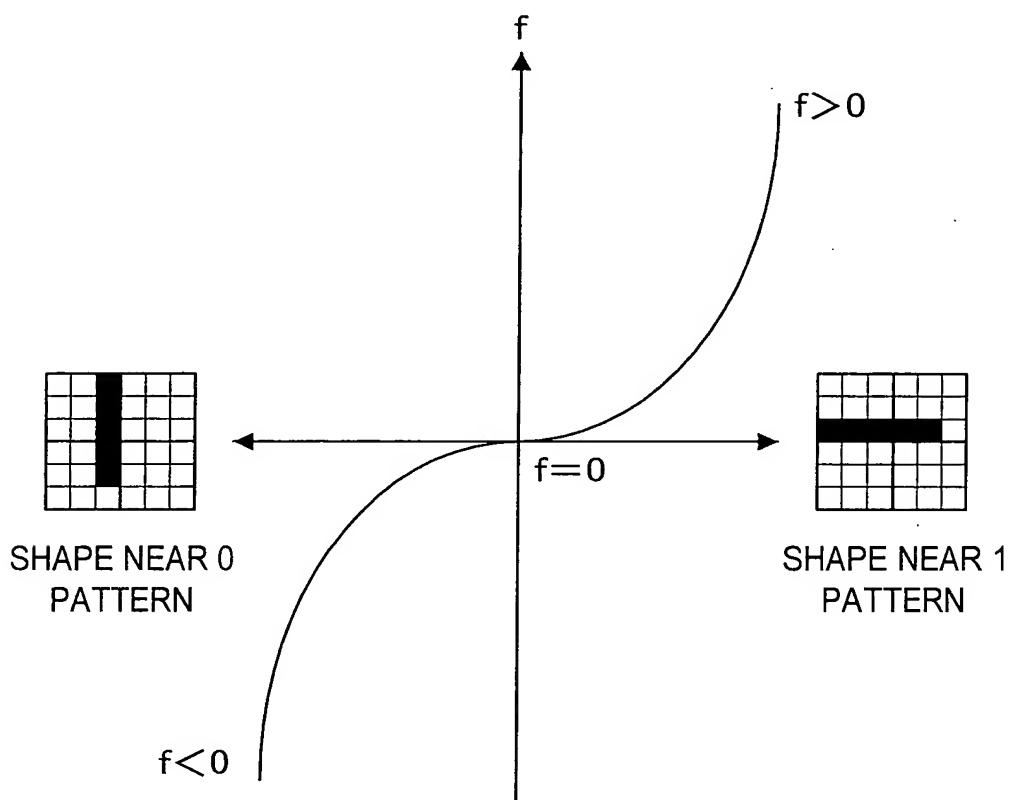
$P_{0,0}$	$P_{1,0}$	$P_{2,0}$
$P_{0,1}$	$P_{1,1}$	$P_{2,1}$
$P_{0,2}$	$P_{1,2}$	$P_{2,2}$

PATTERN IN WHICH FILTER OUTPUT IS NEGATIVE

(c)

BEST AVAILABLE COPY

FIG.36

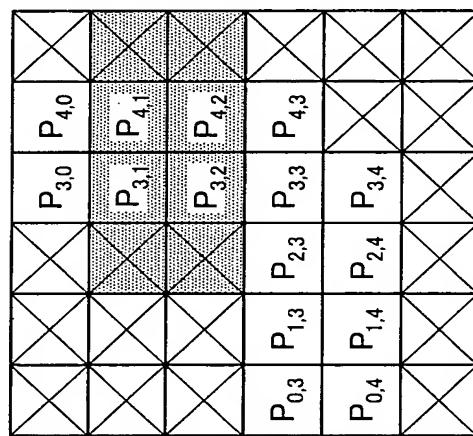


BEST AVAILABLE COPY

FIG.37

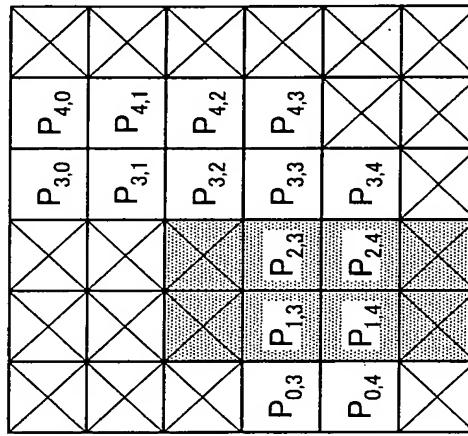
P _{0,0}	P _{1,0}	P _{2,0}	P _{3,0}	P _{4,0}	P _{5,0}
P _{0,1}	P _{2,1}	P _{3,1}	P _{4,1}	P _{5,1}	
P _{0,2}	P _{2,2}	P _{3,2}	P _{4,2}	P _{5,2}	
P _{0,3}	P _{2,3}	P _{3,3}	P _{4,3}	P _{5,3}	
P _{0,4}	P _{2,4}	P _{3,4}	P _{4,4}	P _{5,4}	
P _{0,5}	P _{2,5}	P _{3,5}	P _{4,5}	P _{5,5}	

FILTER
 PROCESSING MASK



PATTERN IN WHICH FILTER
 PROCESSING RESULT IS
 POSITIVE

(a)



PATTERN IN WHICH FILTER
 PROCESSING RESULT IS
 NEGATIVE

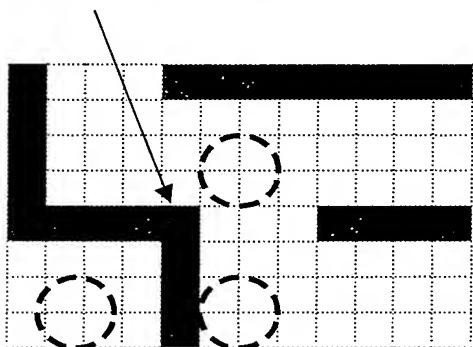
(b)

(c)



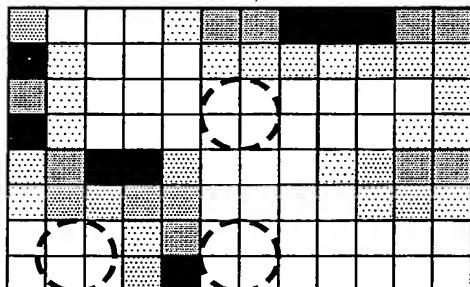
FIG.38

PATTERN ON (x, y)



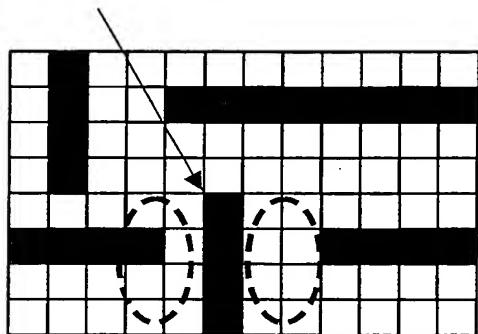
PATTERN OF APPLICATION
EXAMPLE 3 OF FILTER

↓
PRINTING/SCANNING



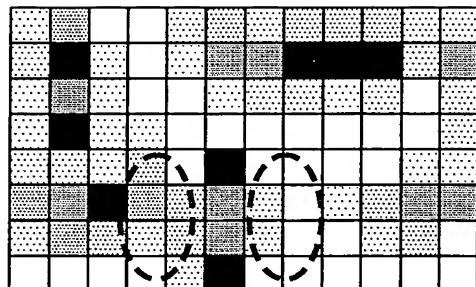
(a)

PATTERN ON (x, y)



PATTERN OF APPLICATION
EXAMPLE 1, 2 OF FILTER

↓
PRINTING/
SCANNING



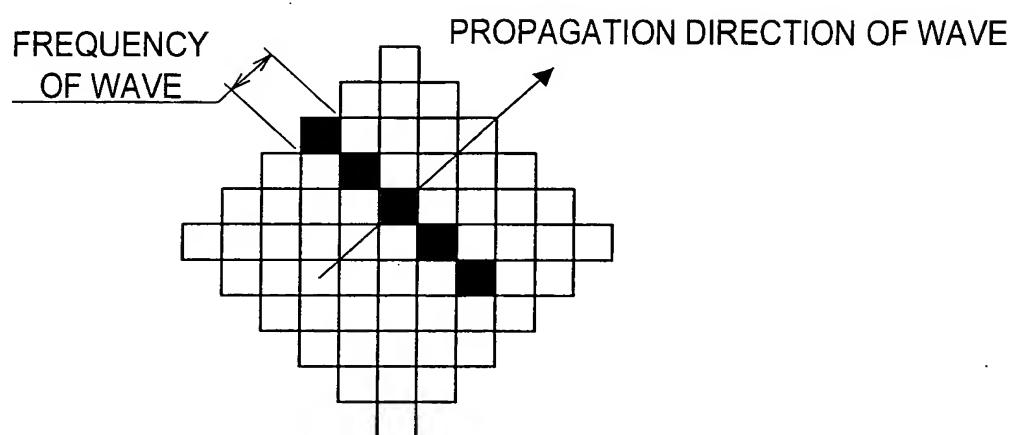
(b)



PORTION TO BE READ IN
BY FILTER PROCESSING

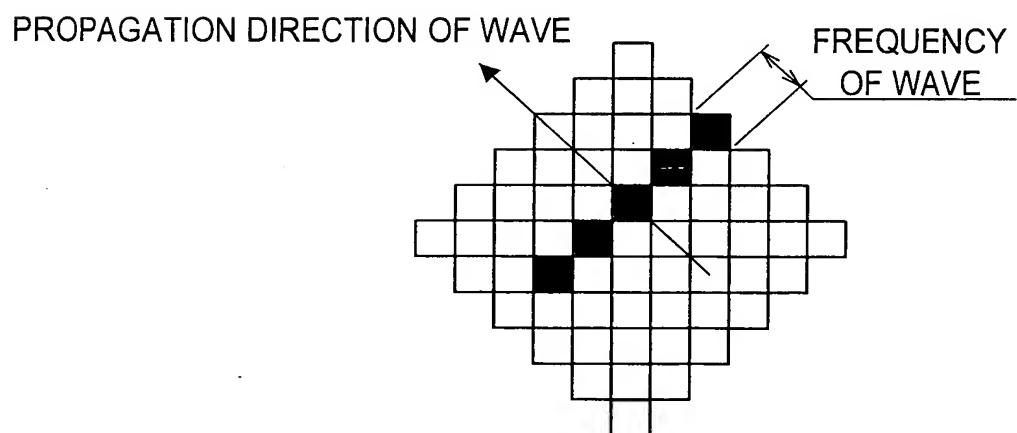
BEST AVAILABLE COPY

FIG.39



PATTERN FOR
RECORDING
INFORMATION "1"

(a)



PATTERN FOR
RECORDING
INFORMATION "0"

(b)

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FIG.40

$P_{3,0}$	$P_{2,1}$	$P_{3,2}$	$P_{3,3}$
$P_{2,0}$	$P_{1,1}$	$P_{2,2}$	$P_{2,3}$
$P_{1,0}$	$P_{0,1}$	$P_{1,2}$	$P_{1,3}$
$P_{0,0}$	$P_{0,2}$	$P_{0,3}$	

FILTER PROCESSING MASK
 (CASE OF SCANNING 600 dpi
 PRINTED MATERIAL AT 400 dpi)

(a)

$P_{3,0}$	$P_{3,1}$	$P_{3,2}$	$P_{3,3}$
$P_{2,0}$	$P_{2,1}$	$P_{2,2}$	$P_{2,3}$
$P_{1,0}$	$P_{1,1}$	$P_{1,2}$	$P_{1,3}$
$P_{0,0}$	$P_{0,1}$	$P_{0,2}$	$P_{0,3}$

PATTERN IN WHICH FILTER
 OUTPUT IS POSITIVE

(b)

$P_{3,0}$	$P_{2,1}$	$P_{3,2}$	$P_{3,3}$
$P_{2,0}$	$P_{1,0}$	$P_{2,1}$	$P_{2,2}$
$P_{1,0}$	$P_{0,0}$	$P_{1,1}$	$P_{1,2}$
$P_{0,0}$	$P_{0,1}$	$P_{0,2}$	$P_{0,3}$

PATTERN IN WHICH FILTER
 OUTPUT IS NEGATIVE

(c)